

REMARKS

Claims 1, 2, 4-6 and 17-31 are in this application and are presented for consideration. By this amendment, Applicant has amended claims 1, 17 and 19. Withdrawn claims 3 and 7-16 have been canceled subject to Applicant's right to file a divisional application to cover these features. New dependent claims 21-31 have been added.

Claims 1, 2 and 4-6 have been rejected under 35 U.S.C. 102(b) as being anticipated by DeLine et al. (U.S. 6,087,953).

The present invention relates to a ball and socket joint for a motor vehicle. The ball and socket joint includes a ball pivot with a pin and a joint ball. The joint ball is rotatably and pivotably arranged in a recess defined in a housing. The ball pivot extends out of the housing through a pin opening in the housing. A moisture sensor detects an amount of moisture located in the recess of the housing. A moisture cover is attached to the housing. The moisture sensor is located within an interior of the moisture sensor cover. The moisture cover advantageously prevents atmospheric air from penetrating the moisture sensor. This significantly improves the accuracy of the moisture level detected in the recess of the housing since the moisture sensor is not affected by the moisture in the air surrounding the ball and socket joint. This leads to more accurate readings of the moisture level in the recess of the housing. A sealing bellows engages the housing and the pin of the ball pivot. The sealing bellows advantageously prevents moisture and other contaminants from entering through the pin opening. The fact that the moisture sensor detects a moisture level in the recess of the housing is significant in the present invention because it allows a user of the motor vehicle to be informed as to whether the

moisture level has exceeded a predetermined limit, which is indicative of potential corroding of the ball and socket joint. The prior art as a whole fails to disclose such features and such moisture preventing and moisture detecting features.

DeLine et al. discloses a unitary rearview mirror support and information display assembly 300 that includes a rearview mirror assembly 301 having a mirror case 302, with a bezel 304 and reflector 306 supported therein, and a rearview mirror support and information display 308, both of which are mounted to a window button 300a adhered to windshield W by mounting assembly 150'. Rearview mirror support and information display assembly 308 includes a support stay 310, including ball pivot member 312 for mounting rearview mounting assembly 301 to windshield button 300a with mounting assembly 150'. Assembly 300 includes one or more of a plurality of electrical and or electronic components mounted in or on any one of the components of mirror assembly 301, including case 302, bezel 304, reflector 306, support and display assembly 308, windshield button 300a and/or circuitboard within assembly 308. Mirror assembly 301 includes a variety of vehicle accessories such as a rain sensor 316 mounted on assembly 308. The rain sensor is a mirror mounted video camera that can be used to visually detect the presence of moisture on the windshield. A mirror attached housing is used to shroud the rain sensor unit and shield it from smoke and other debris. The rain sensor is used to activate a wiper of the vehicle when rain is detected on the windshield.

DeLine et al. fails to teach and fails to suggest the combination of a moisture sensor that detects a level of moisture in a recess defined by a housing wherein a joint ball of a ball pivot is rotatably and pivotably arranged in the recess of the housing. At most, DeLine et al.

discloses a rain sensor 316 that detects the presence of moisture on a windshield W. However, the rain sensor 316 does not detect a level of moisture within an interior of a ball joint comprising a ball member 312 as claimed. Compared with DeLine et al., a moisture sensor cover of the present invention is arranged on the housing wherein a moisture sensor is arranged in an interior of the moisture sensor cover. The moisture sensor of the present invention detects a level of moisture in the recess of the housing. This advantageously allows the moisture level in the housing to be monitored so that a user can be informed as to the state of corrosion of the ball and socket joint. In contrast to the present invention, DeLine et al. only discloses a rain sensor that detects the presence of moisture on a windshield W such that a wiper of the vehicle can be activated when moisture on the windshield is detected. DeLine et al. fails to teach or suggest detecting a moisture level in a housing recess that contains a pivotably and rotatably arranged joint ball as featured in the present invention. In fact, DeLine et al. does not provide any teaching or suggestion for a sealing bellows as claimed. The sealing bellows of the present invention is significant because it advantageously prevents dirt, moisture and other contaminants from entering the pin opening. This significantly increases the service life of the ball and socket joint of the present invention. DeLine et al. does not disclose such prolonged service life advantages since DeLine et al. is completely void of any mention of a sealing bellows as claimed. As such the prior art as a whole takes a different approach and fails to teach or suggest each and every feature of the claim combination. Accordingly, Applicant respectfully requests that the Examiner favorably consider claim 1 as now presented and all claims that depend thereon.

Claims 17-20 have been rejected under 35 U.S.C. 102(b) as anticipated by DeLine et al. or, in the alternative, under 35 U.S.C. 103(a) as obvious over DeLine et al.

As previously discussed above, DeLine et al. fails to provide any teaching or suggestion for the combination of a moisture sensor that detects an amount of moisture in a recess of the housing wherein a joint ball of a ball pivot is pivotably and rotatably arranged in the recess. DeLine et al. also fails to teach or suggest the combination of a moisture sensor that is located within an interior space defined by a portion of a housing and a moisture sensor cover. The fact that the moisture sensor is located within the defined interior space is significant in the present invention because the cover prevents outside atmospheric air from contacting the moisture sensor. This advantageously increases the accuracy of the moisture level detected in the recess of the housing since the moisture sensor is not affected by the moisture in the atmospheric air. DeLine et al. does not disclose such moisture level accuracy advantages since DeLine et al. does not disclose a moisture sensor located in a space defined by a portion of a housing and a moisture sensor cover as claimed. In fact, DeLine et al. directs a person of ordinary skill in the art away from the features of the present invention since DeLine et al. is only concerned with detecting moisture on a windshield W, but does not direct the person of ordinary skill in the art toward a moisture sensor that detects a level of moisture in a recess of a housing of a ball and socket joint as claimed. As such, the prior art as a whole fails to establish a prima facie case of obviousness since the cited prior art reference does not disclose each and every feature of the claimed combination. Accordingly, Applicant respectfully request that the Examiner favorably consider claim 17 as now presented and all claims that depend thereon.

Applicant has added dependent claims 21-31. New dependent claims 21-31 further clarify the features of the present invention. Applicant respectfully request that the Examiner favorably consider new dependent claims 21-31.

Favorable consideration on the merits is requested.

Respectfully submitted
for Applicant,



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